REMARKS

Independent Claim 1 defines the invention as a multi-layered molding material including a layer of a fibrous reinforcement material and a layer of a reinforcement thermoset resin material that is conjoined with the layer of fibrous reinforcement material. The layer of reinforcement thermoset resin material has an inherent tack that holds the fibrous reinforcement material in place. The fibrous reinforcement material is at least partially dry with respect to the reinforcement thermoset resin. The reinforcement thermoset resin material includes a venting structure having venting channels for conducting gases in directions both parallel to the plane of the fibrous reinforcement layer and perpendicular thereto. As a result, gases are allowed to pass out of the molding material via the fibrous reinforcement layer during processing to prevent entrapment of gases.

The Examiner rejected Claims 1-8 as being obvious in view of the combined teachings of the Ness et al. and Rolston references. These rejections are respectfully traversed. On Page 4 of the Office Action, the Examiner acknowledges that the Ness et al. reference fails to teach a reinforced resin material having venting channels. The Examiner further acknowledges that the Ness et al. reference fails to teach the resin layer being discontinuous. Thus, the Examiner's assertion in the last paragraph of Page 7 of the Office Action that "Ness et al. clearly teaches the reinforcement material as presently claimed in Claim 1" is self-contradictory and clearly incorrect.

In that same paragraph, the Examiner also stated that the Rolston reference discloses a fiber reinforced article having vented channels 54 formed in a resin layer 52. However, the body 52 disclosed in the Rolston reference is formed from a closed-cell, plastic foam material. Claim 1 now defines the reinforcement resin material as being formed from a thermoset material, which is clearly different from the rigid closed-cell, plastic foam material disclosed in the Rolston reference. A person having ordinary skill in the art would not consider these materials to be the same or sufficiently similar as to be used interchangeably. In the material of the claimed invention, the resin film viscosity is reduced on heating. Thereafter, the resin film impregnates the fiber and cures to form a rigid polymer.

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In addition, the Rolston reference is directed to a resin injection process. It is common practice in the art to provide grooves in a material to promote faster impregnation of the resin in the fibers of material. The removal of some of the air is an advantage, rather than an essential feature of the material of this invention. In this regard, the Examiner is referred to Col. 1, Line 66 through Col. 2, Line 4 of the Rolston reference, which discloses that air is retained within the material disclosed therein. This is not the case in the material of the claimed invention. The Examiner is further directed to the passage that runs from Page 5, Line 28 through Page 6, Line 2 of the specification, which discloses that during processing, the venting channels allow gases to escape thus preventing the formation of gas pockets. The material disclosed in the Rolston reference would have an appearance similar to that of the prior art material in Fig. 1 of the application.

The material of the present Application was designed such that the resin has a gap in a prepreg system that is rigid enough to stay open prior to processing. This gap then closes during processing. The resin was designed specifically to provide through thickness breathing, together with in-plane breathing, to overcome the problems of void formation in the known prior art (see the description of the embodiment of Fig. 2 on Pages 12 and 13 of the specification that discloses the venting channels that allow for air flow in the x, y and z directions).

The Rolston reference, on the other hand, relates to vacuum assisted resin transfer molding or vacuum assisted resin injection molding. A person having ordinary skill in the art would not consider this process to be the same as venting a prepreg material. In the process disclosed in the Rolston reference, dry reinforcements are placed into a mold, and a vacuum is applied to remove trapped air. Liquid resin is then injected, usually at raised pressure. In Fig. 2 of the Rolston reference, cylindrical tubes are packed into the center of the material so that channels are created that assist the flow of the resin along the length of the material during processing. It should be noted that injecting resin into a fiber stack has its own associated problems. As the resin moves away from the injection point, there is a drop in flow rate which results in uneven delivery of resin through the material. This is a particular problem in larger

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materials. In addition, in the material of the Rolston reference, the tubes are sealed and hollow, and the fiber mat remains on the outer surface, resulting in a material that has a core structure and is not as adaptable to producing multi-ply laminates as the claimed material.

The material disclosed in Figs. 3 and 4 of the Rolston reference is mainly used to produce a flat, planar structure. For example, in Col. 4, Line 54, it is disclosed that the structure of Figures 3 and 4 of the Rolston reference is suitable for use as a tabletop. The material 52 is not a resin material, but a low density filler material having longitudinal grooves that provide channels to assist resin flow following injection. In the preferred embodiment, the material is closed-cell plastic foam, which has grooves formed along its length that act as flow channels. At Col. 4, Lines 44-49 of the Rolston reference, other suitable packing materials, such as granules, plastic and glass spheres, are defined.

A person having ordinary skill in the art would consider the material of the Rolston reference to be a "core" or "sandwich panel material" rather than a reinforcement material. The grooves in the material are provided to assist resin flow rather than air removal. In addition, the grooves run through the length of the material, but not through the thickness of the material. In contrast, in the claimed material, substantial venting is achieved through the thickness of the material. The central ventilated structure is a resin material for subsequent impregnation of the fiber sheets. Thus, the invention as defined in Claims 1-8 is clearly not obvious in view of the combined teachings of the Ness et al. and Rolston references.

Respectfully submitted,

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